

**STATUS REPORT OF THE 1ST ADVANCED OFFSET FRONTAL CRASH PROTECTION GROUP
(Based on the results of the meeting held in Rome on 29th September)**

Participants: C. Lomonaco (Chairman, Ministry of Transport of Italy), R. Lowne and A. Hobbs (EEVC), T. Hollowell (NHTSA), D. Dalmotas (Ministry of Transport Canada), K. Oki (Ministry of Transport Japan).

INTRODUCTION

The chairman resumed to the participants the scopes and the goals of the working group, remarking that the work program has to be finalised within five years and it should be set into the following deadlines:

1. ESV Windsor Conference

Presentation of the first report which contains the determination of research specific aspects and the working program launching focused on the drawing up of a technical standard on frontal crash protection.

2. End 1999/beginning 2000

Completion of the technical standard project and validation program launching.

3. ESV 2001

Work completion and technical standard project presentation to the ESV conference.

It was remarked that basically two main developing tendencies on frontal collision standard are present:

- 1) In Europe the Parliament has given mandate to EEVC to review the present Directive on Frontal Collision (Deformable barrier, 40% overlap, impact speed, some geometrical and biomechanical parameters).
- 2) In the USA the Congress has given mandate to NHTSA to go through a short/medium term activity to verify the possibility to finalise a standard which could be harmonised with the European standard.
Furthermore, a long term activity has been devoted to the development of a specific USA frontal impact test.

That being said, it was called up on the participants of the group to explain the research activities in the field of frontal collision.

PRESENTATION OF THE RESEARCH ACTIVITIES

NHTSA: the activity in progress devoted to the assessment of the different frontal impact procedures used in Europe and USA nowadays was presented. Such procedures are different in terms of impact speeds and barrier types and for the introduction, into the USA tests, of the 5 % female dummy.
The activity is carried out by using 3 vehicle samples (IHRA/afc-1).

Accordingly the research progress devoted to the develop of frontal impact test procedure, based on accidentological data, was presented (IHRA/afc-2).

EEVC: the offset frontal impact test development history, against a deformable barrier at 56 km/h, was resumed. Also the different working items of WG16 were displayed, which will be developed by WG16 to assess improvements/modifications to the procedure (IHRA/afc-3).

Therefore an EURO-NCAP program on frontal/lateral/pedestrian impact was presented: such program was produced through the collaboration of different European societies and it is involving also European consumer associations. The frontal impact test has been carried out at 64km/h instead of 56km/h required by the European Directive (IHRA/afc-4).

JAPAN: gave out a complete accidentological analysis referred to the Japanese reality in order to remark which types and harmful impacts mostly occur (IHRA/afc-5).

CANADA: explained that an activity to assess neck lesions during frontal impact against stiff 0° barrier is in progress. Such research is particularly devoted to evaluate lesions with or without air-bag using a 5% female dummy (IHRA/afc-6).

DISCUSSION AND FUTURE ACTIVITIES ASSIGNMENT

During the discussion items and distinguishing characteristics of miscellaneous existing standards, on which activities are in progress, were pointed out.

On the base of such characteristics a board to define the main aspects was drawn. On each of these the participants of the group engaged theirself to develop specific activities and to give out results.

WORKING MATTER	USA	CAN	EEVC	J	AUS
Trolley	X				
Types of barriers	X	X			
-stiff	x	x			
-deformable	x	x			
Impact angle	X				
Dummy	X	X	X		
5% female	x	x			
95% male	x	x			
Impact speed	X	X	X		
Performance criteria	X	X	X		
-footwell intrusion	x		x		
-steering wheel intrusion	x		x		
-abdomen		x			
-arms		x			
Evaluation of Air-Bag performance	X	X			
-Deployment time analysis and aftermath on results.		x			
Standard extension on vehicle of category N1.			X		

At the end of the discussion the “American” approach (with mobile barrier) and the “European” approach (the vehicle against a fixed barrier), as discussion focal point on Harmonisation, was proposed by EEVC (Mr. Lowne).

Therefore the analysis and the way to cope the methodological assessment of advantages and disadvantages of the two alternatives was convened.

A draft board, which will be developed and completed afterwards, is reported hereunder:

Mobile barrier approach

Advantages	Analysis method
Mass effect assessment possibility	Test speed depending on vehicle mass during the test with fixed barrier.
Proper reproduction of vehicle pulse and of the energy involved	
Impact angle effect assessment	
Compatibility evaluation	Load cells on fixed barrier use
Disadvantages	
Complexity	Aligned tests realisation
Repeatability	
Plants capacity	Evaluation of trolley high speed capacity (about 120 km/h) in existing test premises.
Ground-vehicle interaction improperly reproduced	

SHORT-TERM WORKING PROGRAM

The group scheduled the next meeting on march 98, which date will be convened between the chairmen of frontal impact and compatibility group.

In the next meeting the aspects concerning frontal impact and reported in the above board will be discussed in order to produce an interim report for ESV Windsor Conference.

In such view and with the purpose to capitalize the limited available resources, representants from USA, Canada and EEVC are warmly invited to send to the Chairman within the time limit documents which refer on the state of the art of research aspects on which they got assignment.

An annex with a list of classified documents is attached.

LIST OF CLASSIFIED DOCUMENTS

- IHRA/afc-1-Development of a Frontal Offset Crash Test Procedure (B. Park,R. Morgan, J. Lowrie)
- IHRA/afc-2-NHTSA's Development of a Frontal Offset Test Procedure Based on Crash Data (S.L.Stucki).
- IHRA/afc-3-Report of IHRA Activities WG on Advanced Offset Frontal Protection (R. Lowne).
- IHRA/afc-4-EURO NCAP crash test programme
- IHRA/afc-5-Road traffic Accident in JAPAN.
- IHRA/afc-6-AIR-BAG Aggressiveness Study (D.J. Dalmotas).